

Beginners Training for Safe Handling of Radiation and Radioisotopes in Tohoku University

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journal or publication title	CYRIC annual report
volume	2007
page range	129-131
year	2007
URL	http://hdl.handle.net/10097/44404

IX. 1. Beginners Training for Safe Handling of Radiation and Radioisotopes in Tohoku University

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During 2007, the beginners training for safe handling of radiation and radioisotopes in Tohoku University was conducted in three courses as usual:

1) Radiation and Isotopes, 2) X-ray Machines and Electron Microscope, and 3) Synchrotron Radiation (SOR). The training was held twice a year, May and November, under the help for lectures and practice from various departments and research institutes of the university.

Lectures in English which were started in November of 2002 were continued for students and/or researchers who are not so familiar with Japanese language, by using PC projector and text of copies of view graphs (English class). The membership of the English class is almost constant as shown later.

The training for "Radiation and Radioisotopes" is for persons who use unshielded radioisotopes and accelerators, and has been conducted from 1977. The contents of lectures and practices are shown in Table 1. The order and content of the lecture was slightly modified from 2005 aiming at better understanding by trainees: the lecture on "the effect of radiation on human" was moved to the second to give stronger motivation for the training course and the following lectures. Along with the change, a new introductory lecture of "Introduction to radiation" was newly prepared as the first lecture to provide knowledge required to understand the lecture of "the effect of radiation on human". In the fiscal year of 2007, the training was performed for 499 persons (17 persons in the English class). The departments or institutes to which they belong are given in Table 2.

The training for "X-ray machines and electron microscopes" started at the end of 1983. The training is scheduled twice a year at the same time as that for "Radiation and Radioisotopes". In this course, only lectures are given with no practice. The contents of the lectures and the distributions of trainees are shown in Table 3 and Table 4, respectively.

The number of trainees was 395 (37 in the English class).

The training for the "Synchrotron Radiation" began at the end of 1995. The contents of the lectures are the same as those of the radiation and radioisotopes but no practice. In 2007, the number of trainees of the SOR course was 94 (11 in the English class).

Table 1. Contents of the lectures and practices for safe handling of radiation and radioisotopes in 2007.

Lectures (one day)	Hours
Introduction to radiation	0.5
Effects of radiation on human	1.0
Radiation physics and measurements	1.0
Chemistry of radioisotopes	1.0
Radiological protection ordinance including video	1.5
Safe handling of radioisotopes	1.5

Practices (one day)	Hours
Treatment of unsealed radioactive solution	4.0
Measurement of surface contamination and decontamination	1.0
Measurement of gamma-rays and beta-rays	2.0

Table 2. Distribution of trainees for "Radiation and Radioisotopes" in 2007.

Department	Staff	Student	Total	English class
CYRIC	1	6	7	0
Medicine	11	61	72	3
Dentistry	2	22	24	0
Pharmacy	0	45	45	1
Science	3	66	69	2
Engineering	5	87	92	3
Agriculture	1	63	64	0
Research Institutes	19	99	118	8
The others	4	4	8	0
Total	46	453	499	17

Table 3. Contents of the lectures for "X-ray machines and Electron microscopes" in 2007.
(same for both Japanese and English class)

Lectures (one day)	Hours
Safe handling of X-ray machines	1.5
Radiological protection ordinance	0.5
Video for safe handling of radiation and radioisotopes	0.5

Table 4. Distribution of trainees for “X-ray machines and Electron microscopes” in 2007.

Department	Staff	Student	Total	English class
Medicine	1	2	3	0
Dentistry	1	0	1	0
Pharmacy	1	13	14	0
Science	2	22	24	3
Engineering	15	164	179	15
Research Institutes	28	141	169	19
The others	0	5	5	0
Total	48	347	394	37

Table 5. Distribution of trainees for “Synchrotron radiation” in 2007.

Department	Staff	Student	Total	English Class
Science	0	5	5	0
Engineering	7	22	29	4
Research Institutes	14	46	60	7
Total	21	73	94	11